

**A NEW MICROCADDISFLY GENUS
(TRICHOPTERA: HYDROPTILIDAE) FROM THE
INTERIOR HIGHLANDS OF ARKANSAS, U.S.A.**

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Abstract.—*Paucicalcaria*, a new hydroptilid genus, and *P. ozarkensis*, the type species, are described from the Magazine Mountain area of Arkansas. The genus is distinguished by its unique tarsal spur count (0.1.2), the absence of ocelli, and a greatly reduced forewing venation. The new genus appears to be most closely related to the hydroptiline genus *Hydroptila* based on the similarities of the genitalia and thoracic nota and the mutual absence of ocelli.

During a recent survey of the caddisflies of mountainous Arkansas, we encountered two male specimens representing a new genus of Hydroptilidae. The specimens were taken in a UV-light trap sample collected at Gutter Rock Creek near Green Bench, Logan County, Arkansas. Gutter Rock Creek is a small, intermittent stream originating on the northwest corner of Magazine Mountain, the highest point between the Appalachian and Rocky Mountains, and has a gradient of 208.6 m/km between the origin and the type locality. This high gradient, along with the coarse substrate and relatively pristine riparian corridor, make the stream a rare habitat type for the central United States.

Morphological terminology follows that of Marshall (1979).

***Paucicalcaria*, new genus**

Figs. 1-8

Description. Male. Forewings narrow, pointed at apex; venation reduced, indistinct; costal fringe long. Hindwings narrow, pointed at apex; venation reduced. Head unmodified; tentorium complete; ocelli absent; antennae simple, 24-segmented, shorter than forewing. Mesoscutellum subtriangular with convex anterior margin; postero-dorsal edge touching posterior margin of notum on meson; transverse suture lacking. Metascutellum semicircular; not extending to lateral margin of notum but joined to it by narrow strap-like piece. Tarsal spur formula 0.1.2; hind tarsus with one spur each in apical and subapical positions. Setose lateral process of abdominal segment V present. Segment VII with ventral process. Segment VIII small; unmodified. Segment IX fused; flexed dorsally; with antero-lateral apodeme and postero-lateral process. Inferior appendages simple, robust, long, and straight; extending posteriorly well beyond apex of tergite X. Tergite X short; lightly sclerotized; highly modified. Subgenital appendages simple. Aedeagus relatively long and slender; with distinct proximal and distal regions separated by a constriction; distal region sclerotized; intromittent organ present, demarcated basally by suture; spiral titillator present.

Female and immatures unknown.

Type species. *Paucicalcaria ozarkensis* n. sp.

Diagnosis. *Paucicalcaria* can be distinguished from all other members of the family Hydroptilidae on the basis of its unique spur count (0.1.2), especially considering the arrangement of the spurs on the hind leg.

Discussion. Most characteristics are consistent between the two specimens, but there is some variation in the shape of the metascutellum. It is semicircular in the holotype and pentagonal in the paratype. More specimens must be collected before we can establish which shape, if either, is more common within the genus.

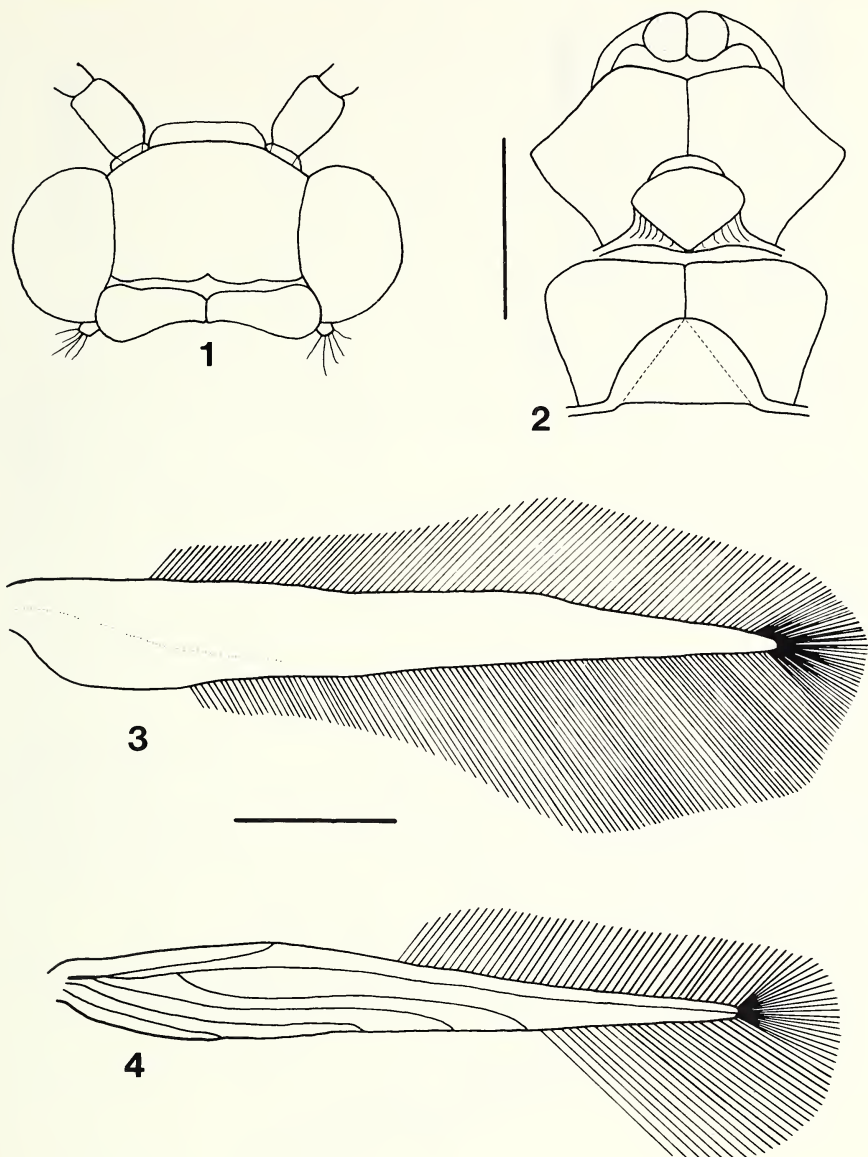
Based on the nature of the forewings and the absence of the mesokatepisternal suture, the new genus is a member of the subfamily Hydroptilinae. The form of the genitalia and the absence of a mesoscutellar transverse suture and bracteoles suggest a relationship to members of the tribe Hydroptilini. Within the tribe, *Paucicalcaria* appears to be most closely related to the genus *Hydroptila* as evidenced by the following features of the new genus that are shared by all or a number of species of *Hydroptila*: 1) the absence of ocelli, 2) the form of the genitalia (aedeagus relatively long and slender, consisting of distal and proximal ejaculatory ducts and a well demarcated intromittent organ, with distinct proximal and distal regions separated by a constriction, regions not differing greatly in maximal widths, distal portion entirely or at least with main axis sclerotized, with spiral titillator; claspers simple, long, and straight; subgenital appendages present; subgenital plate absent), and 3) the configuration of the thoracic nota and terminal abdominal segments (pronotal warts round, appressed along midline; mesoscutellum subtriangular with convex anterior margin, extending to or nearly to posterior of notum; metascutellum pentagonal to triangular, joined to lateral notal margin by strap-like piece, abdominal segment VII with a ventral process; segment VIII unmodified, lacking a ventral process; segment IX annular, with antero-lateral apodeme and postero-lateral process). Although the genitalia of both genera exhibit the same basic theme, the claspers of *Paucicalcaria* are more robust and extend further posteriorly relative to tergite X than in *Hydroptila*. Possibly the two genera diverged from a common ancestor that had a complete tentorium, the distinctive genitalia and thoracic nota, a 0.2.4 spur count, typical postoccipital warts, and that lacked ocelli. The lineage leading to *Hydroptila* could be achieved through reduction of the tentorium, modification of the postoccipital warts into scent caps, and slight changes in the genitalia. The other lineage could lead to *Paucicalcaria* through loss of tarsal spurs on the two posterior pairs of legs, modification of the forewings, and small alterations of the genitalia. Although these conclusions are well supported by the available data, they are somewhat tenuous because of the lack of supporting evidence that might be provided by the female and immatures and the monotypic nature of the genus.

Etymology. Pauci-, Latin, meaning few; calcar, Latin, meaning spur; referring to the low tarsal spur count. Gender: feminine.

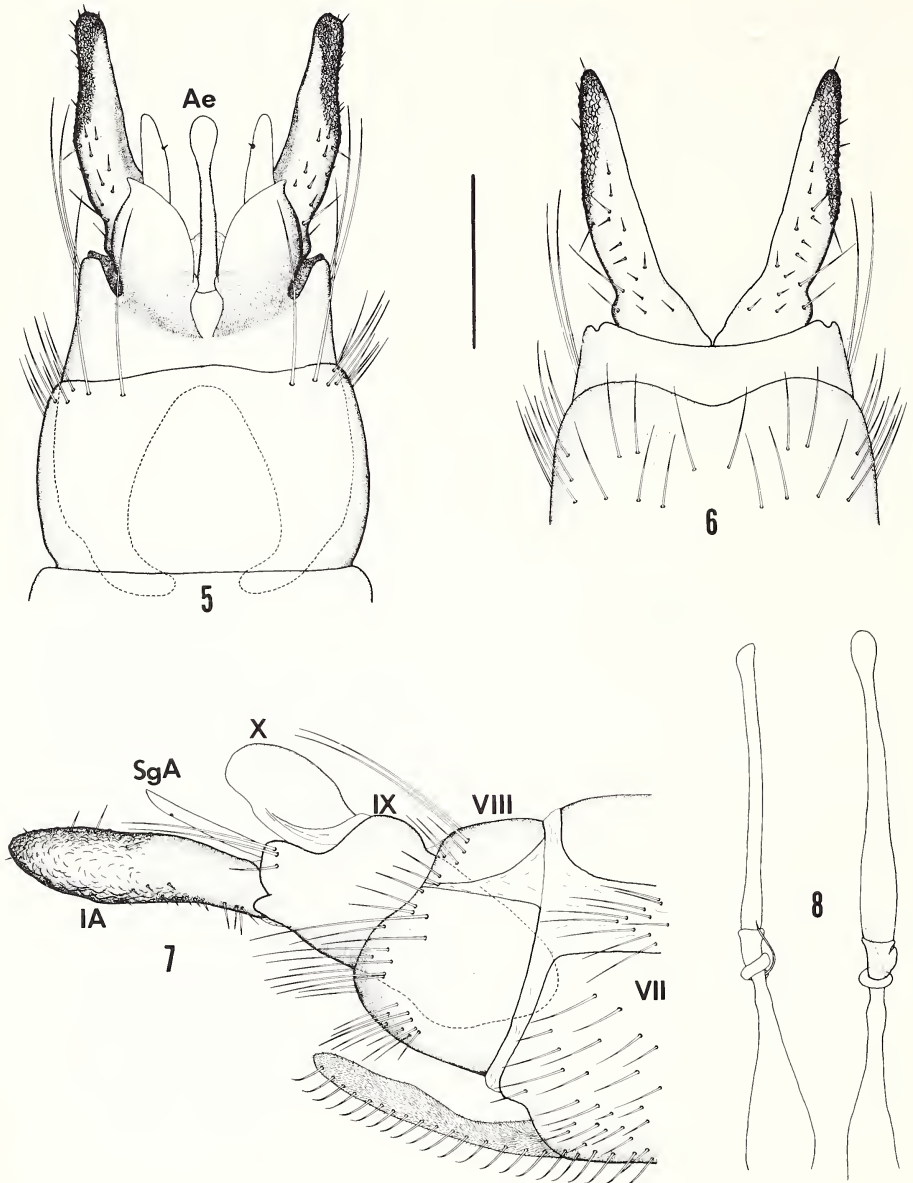
***Paucicalcaria ozarkensis*, new species**

Figs. 1-8

Description. Forewings 1.9-2.1 mm long; base color light brown in alcohol; trichia darker brown; with erect black setae scattered on dorsal surface. Hindwings 1.6-1.8 mm long; coloration as in forewings; lacking erect setae. Head and thorax light brown in alcohol. Postoccipital warts subelliptical, not hinged; antennae 24-segmented,



Figs. 1-4. *Paucicalcaria ozarkensis*. 1. Head, dorsal. 2. Thorax, dorsal. 3. Forewing. 4. Hindwing. Scale bar (Figs. 1, 2) = 0.2 mm. Scale bar (Figs. 3, 4) = 0.5 mm.



Figs. 5-8. *Paucicalcaria ozarkensis*, male genitalia. 5. Dorsal view. 6. Ventral view. 7. Lateral view. 8. Aedeagus, lateral and dorsal views. Ae, aedeagus; IA, inferior appendage; SgA, Subgenital appendage. Scale bar = 0.1 mm.

short; fifth segment of maxillary palpi longest, third and fourth subequal to fifth, first and second short. Pronotal warts circular, appressed at midline; mesonotum with few scattered setae; metanotum lacking setation. Abdomen creamy white in alcohol. Sternal gland with short lateral process; one long and one or two short setae at apex; pit not sculptured. Segment VII with long ventral process; process and midline of sternite with row of uniform setae. Segment VIII short, with 2 pairs of long setae dorsally, numerous lateral and ventral setae. Segment IX fused; apodeme extending into segment VII and opening anteriorly; posterolateral process with two long setae at apex. Tergite X deeply cleft dorsally, fused ventrally; forming a pair of hood-shaped lobes from dorsal view; ovoid in lateral aspect. Subgenital appendages strap-like; with small spine distally; sword-shaped in lateral view. Inferior appendages elongate, diverging apically; disto-lateral surface rugose. Aedeagus with distinct proximal and distal regions; basal portion widest proximally, tapering distally; titillator spiralling anteriorly one revolution before giving rise to short, slender posteriorly-directed process; distal portion of aedeagus tapering throughout length before expanding at apex.

Holotype. ♂. ARKANSAS, *Logan Co.*, Gutter Rock Creek at low-water bridge on road to Green Bench (35°11'46"N, 93°39'46"W; elev. 396 m), 1 May 1987, R. A. B. Leschen, black light.

Paratype. ♂. Same data as holotype.

The holotype and paratype are deposited in the United States National Museum of Natural History, Smithsonian Institution, Washington, D.C.

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